# BANGALORE WATER SUPPLY
# AND SEWRAGE BOARD
# CAUVERY BHAVAN, KEMPEGOWDA ROAD
# BANGALORE - 560 009

Telephone: 91-80-22945106 Fax: 91-80-22945106

Through E-Procurement

**TENDER FOR THE WORK OF**

DESIGN, CONSTRUCTION, AND COMMISSIONING OF **20 MLD STP BASED ON INTEGRATED FIXED FILM ACTIVATED SLUDGE (IFAS-PROCESS) WITH BNR, TERTIARY TREATMENT AND ODOUR CONTROL UNITS AT KORAMANGALA** INCLUDING 7 YEARS OF OPERATION & MAINTENANCE (TURNKEY CONTRACT)

**VOLUME 3 of 4**

**(DRAWINGS)**

**OCTOBER – 2025**

**Office of the** *Chief Engineer (WWM-E)/CE (UWP)*
**BANGALORE WATER SUPPLY & SEWERAGE BOARD**
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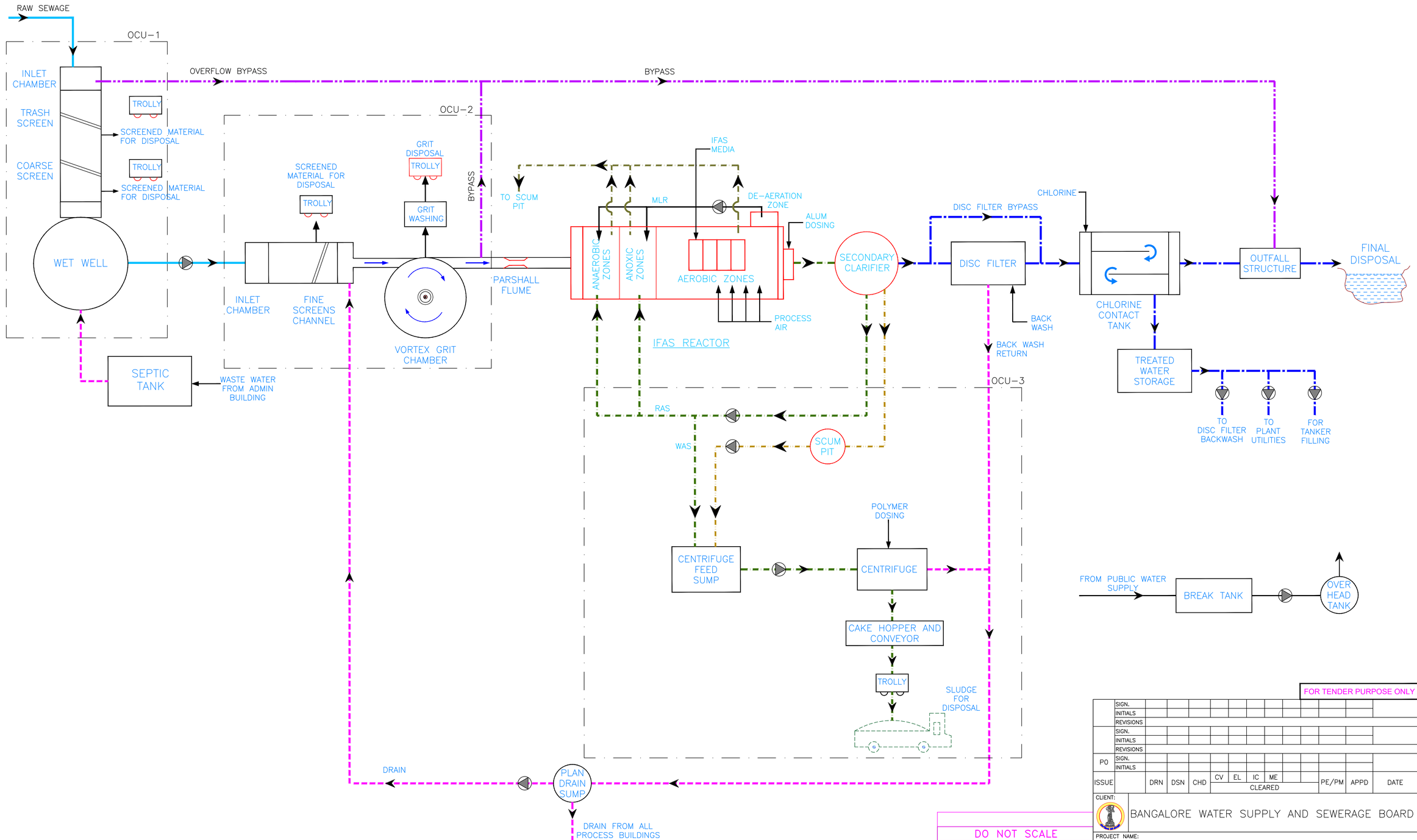
TITLE: PROCESS FLOW DIAGRAM

DWG NO TCE.13052A-CV-3008-SL-30000D

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| | INITIALS | | | | | | | | | | | |
| | REVISIONS | | | | | | | | | | | |
| P0 | SIGN. | | | | | | | | | | | |
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| | | CLEARED | | | | | | | | | | |

CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 20 MLD CAPACITY STP AT KORAMANGALA

DWG NAME: PROCESS FLOW DIAGRAM

TATA CONSULTING ENGINEERS LIMITED

SCALE : NTS | DWG NO. TCE.13052A-CV-3008-SL-30000D | ISSUE P0

DC & DISC : BLR-CV

SIZE-A1

TCE FORM NO. 091 R1

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FILE NAME : PFD (20 MLD Koramangala).dwg

FILE NAME: F-091-Rev-R1.dwg

DWG NO: TCE.13052A-CV-3008-SL-30400

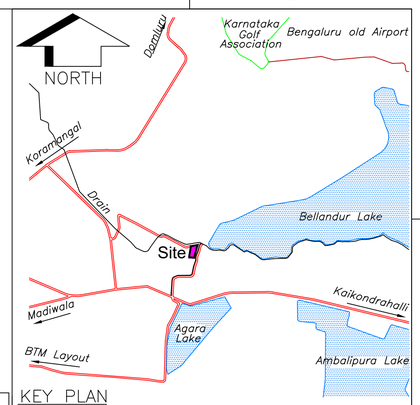
TITLE: OVERALL PLANT LAYOUT WITH CONTOURS

## LIST OF BOUNDARY DETAILS

| BOUNDARY POINTS | CO-ORDINATES EASTING | CO-ORDINATES NORTHING | DISTANCE IN METRES |
|---|---|---|---|
| B2 | 786568.281 | 1430631.161 | 78.67 |
| B3 | 786591.181 | 1430749.772 | 120.81 |
| B4 | 786594.126 | 1430749.723 | 2.95 |
| B5 | 786598.022 | 1430779.574 | 30.13 |
| B6 | 786670.396 | 1430796.933 | 74.50 |
| B7 | 786682.026 | 1430771.664 | 28.36 |
| B8 | 786651.881 | 1430664.289 | 112.25 |
| B1 | 786646.931 | 1430629.396 | 35.24 |

## LIST OF POINTS

| POINTS | EASTING | NORTHING | RL |
|---|---|---|---|
| SBM5 | 786560.370 | 1430768.545 | 875.198 |
| SBM6 | 786547.964 | 1430748.633 | 875.206 |
| R7 | 786613.564 | 1430788.569 | 875.512 |
| R8 | 786671.659 | 1430770.001 | 875.470 |
| R9 | 786674.768 | 1430786.317 | 877.989 |




KEY PLAN

## KORAMANGALA TSPS COMPONENT LIST

| SI NO. | COMPONENT NAME | NO. OF UNITS | SIZE IN METERS L | W | LD*/H | DIA | Free board (m) |
|---|---|---|---|---|---|---|---|
| | TERMINAL SEWAGE PUMPING STATION (TSPS) | | | | | | |
| 01 | TSPS INLET CHAMBER | 1 | 4.10 | 3.60 | 1.10 | – | 0.75m Above FGL |
| 02 | TRASH SCREEN & COARSE SCREEN CHANNEL | 2 | 10.00 | 1.50 | 0.90 | – | 0.75m Above FGL |
| 03 | COARSE SCREEN EFFLUENT CHANNEL | 1 | 1.50 | 3.60 | 0.80 | – | 0.75m Above FGL |
| 04 | WET WELL | 1 | – | – | 1.80 | 10.6 | 0.75m Above FGL |
| 05 | PUMPING HOUSE (ABOVE WET WELL) | 1 | – | – | 5.50 | 10.6 | – |
| 06 | VALVE CHAMBER | 2 | 8.00 | 2.50 | 2.00 | – | – |

## KORAMANGALA 20MLD STP COMPONENT LIST

| SI NO. | COMPONENT NAME | NO. OF UNITS | SIZE IN METERS L | W | LD*/H | DIA | Free board (m) |
|---|---|---|---|---|---|---|---|
| | SEWAGE TREATMENT PLANT (STP) | | | | | | |
| 07 | STP INLET CHAMBER | 1 | 2.30 | 4.80 | 1.50 | – | 0.50 |
| 08 | FINE SCREEN CHANNEL | 2 | 7.00 | 1.80 | 1.10 | – | 0.50 |
| 09 | FINE SCREEN EFFLUENT CHANNEL | 1 | 1.50 | 4.80 | 1.00 | – | 0.50 |
| 10 | GRIT CHAMBER | 2 | – | – | 1.50 | 3.80 | 0.50 |
| 11 | PARSHALL FLUME CHANNEL | 1 | 15.00 | 1.50 | 0.70 | – | 0.50 |
| 12 | IFAS FLOW DISTRIBUTION BOX | 1 | 3.00 | 3.00 | 1.80 | – | 0.50 |
| 13 | ANAEROBIC ZONE | 2 | 5.90 | 18.00 | 6.00 | – | 0.60 |
| 14 | ANOXIC ZONE | 2 | 19.50 | 18.00 | 6.00 | – | 0.60 |
| 15 | AEROBIC ZONE | 2 | 40.80 | 18.00 | 6.00 | – | 0.60 |
| 16 | DE-AERATION ZONE | 2 | 12.30 | 3.00 | 5.70 | – | 0.60 |
| 17 | AERATION BASIN EFFLUENT CHANNEL | 1 | 33.00 | 1.50 | 0.60 | – | 0.50 |
| 18 | SECONDARY CLARIFIER FLOW DISTRIBUTION BOX | 1 | 4.20 | 3.00 | 1.80 | – | 0.50 |
| 19 | SECONDARY CLARIFIERS | 2 | – | – | 3.70 | 25.50 | 0.50 |
| 20 | DISC FILTER INFLUENT AND EFFLUENT CHANNEL | 1 | 5.40 | 1.20 | 0.70 | – | 0.50 |
| 21 | DISC FILTER | 1 | 6.00 | 3.00 | 1.50 | – | 0.50 |
| 22 | DISC FILTER BYPASS CHANNEL | 1 | 6.00 | 1.20 | 0.70 | – | 0.50 |
| 23 | DISC FILTER BUILDING(ABOVE DISK FILTER) | 1 | 6.00 | 5.40 | 5.50 | – | – |
| 24 | CCT FLOW DISTRIBUTION BOX | 1 | 3.00 | 3.00 | 1.80 | – | 0.50 |
| 25 | CHLORINE CONTACT TANK | 2 | 25.4 | 6.20 | 1.90 | – | 0.50 |
| 26 | CCT EFFLUENT CHANNEL | 1 | 13.00 | 1.20 | 0.70 | – | 0.50 |
| 27 | SECONDARY PUMP HOUSE | 1 | 12.00 | 8.00 | 5.50 | – | – |
| 28 | CENTRIFUGE FEED SUMP | 1 | 8.00 | 8.50 | 3.50 | – | 1.00 |
| 29 | CENTRIFUGE FEED PUMP HOUSE | 1 | 8.00 | 9.00 | 5.50 | – | – |
| 30 | CENTRIFUGE BUILDING(G+1) | 1 | 8.00 | 9.00 | 5.50 | – | – |
| 31 | BLOWER BUILDING(INCLUDING ELECTRICAL PANEL) | 1 | 13.00 | 13.00 | 9.00 | – | – |
| 32 | CHEMICAL BUILDING | 1 | 11.00 | 10.00 | 5.50 | – | – |
| 33 | CHLORINATION BUILDING | 1 | 21.00 | 9.00 | 5.50 | – | – |
| 34 | SECONDARY SCUM PIT | 1 | – | – | 1.50 | 5.50 | 1.50 |
| 35 | PLANT DRAIN SUMP | 1 | – | – | 1.50 | 5.50 | 2.00 |
| 36 | TREATED WATER STORAGE | 1 | 5.50 | 4.00 | 3.00 | – | 1.00 |
| 37 | TRANSFORMER YARD | 1 | 12.00 | 7.00 | – | – | – |
| 38 | ELECTRICAL SUB STATION(TSPS/STP) | 1 | 20.00 | 10.00 | 5.50 | – | – |
| 39 | PLANT DG ROOM | 1 | 12.00 | 10.00 | 6.50 | – | – |
| 40 | ADMIN BUILDING INLUDES PLC SCADA,LABORATORY(G+1) | 1 | 10.00 | 10.00 | 4.50 | – | – |
| 41 | PARKING SHED | 1 | 15.00 | 6.00 | 4.50 | – | – |
| 42 | GUARD ROOM(SECURITY ROOM) | 1 | 3.00 | 3.00 | 3.00 | – | – |
| 43 | OUTFALL CHAMBER | 1 | 3.00 | 3.00 | 1.50 | – | – |
| 44 | OVERFLOW CHAMBER | 2 | 2.00 | 2.00 | 1.50 | – | 0.50 |
| 45 | ODOUR CONTROL ROOM(OCU 1) NEAR TSPS | 1 | 6.00 | 4.00 | 6.00 | – | – |
| 46 | OCU 2 (Near Preliminary treatment units) | 1 | 6.00 | 4.00 | 6.00 | – | – |
| 47 | OCU 3 (Near Sludge handling units) | 1 | 6.00 | 4.00 | 6.00 | – | – |

## AREA STATEMENT

| Area in Sqmt | Area in Acre |
|---|---|
| 13233.341 | 3.269 |

HFL : 874.910

## LEGENDS:

- RAW SEWAGE PIPE
- BYPASS LINE
- SLUDGE PIPE
- SCUM PIPE
- SUPERNATANT PIPE
- PROPOSED ROAD
- TREATED WATER
- EXISTING ROAD
- (10) PROPOSED STP UNITS
- PROPOSED PRECAST RCC COMPOUND WALL
- PROPOSED RCC RETAINING WALL
- DRAIN;NALA
- EXISTING FENCE;EXISTING BUILDING
- ASPHALT ROAD, CONCRETE ROAD.
- DRAIN, BUILDING/SHEET HOUSE.
- COMPOUND WALL WITH GATE, FENCE.
- POWER POLE & LINE, TRANSFORMER.
- ORDINARY, MANGO TREE, CHAMBER, MANHOLE, LAMP POST, NAME BOARD.
- BOUNDARY & POINTS, ELECTRIC BOX.
- CONTOUR WITH CONT RL, SPOT LEVELS.
- CHAMBER INVERT LVL, DRAIN CENTER LVL. MANHOLE INVERT LVL,
- BENCH MARKS, TRAVERSE POINTS. – SBM1 R1

## NOTES:

1. ALL LEVELS ARE IN METERS,UNLESS OTHER WISE MENTIONED.
2. ALL LEVELS ARE WITH REFERENCE TO THE GTS BENCH MARK ENGRAVED ON CENTER OF 2ND STONES ON EAST SIDE OF QUEEN VICTORIA'S STATUE IN CUBBON PARK,BANGALORE.ITS VALUE IS 912.266M.
3. ALL THE CO-ORDINATES ARE BASED ON UTM WGS-84.
4. ALL THE PROCESS AND NON-PROCESS BUILDING DIMENSIONS SHOWN ARE MINIMUM AND HEIGHT OF THE BUILDING SHALL BE FROM FINISHED FLOOR LEVEL TO THE BOTTOM OF ROOF BEAM.
5. FINISHED FLOOR LEVEL OF ALL PROCESS AND NON PROCESS BUILDING SHALL BE ATLEAST 500MM ABOVE THE FINISHED GROUND LEVEL.
6. FINISHED GROUND LEVEL (FGL) OF THE STP SHALL BE MINIMUM 500MM ABOVE THE HFL.
7. ALL THE BUILDING DIMENSIONS (OR AREA WHEN CALCULATED) SHOWN ARE MINIMUM. HOWEVER, CONTRACTOR MAY UPSIZE THESE DIMENSIONS (OR AREA WHEN CALCULATED) BASED ON HIS DESIGN TO MEET THE SPECIFIED TENDER REQUIREMENTS.
8. TOTAL LENGTH OF PROPOSED 5m WIDE ROAD = 410m
9. TOTAL LENGTH OF PROPOSED RCC PRECAST COMPOUND WALL = 220m
10. TOTAL LENGTH OF PROPOSED RCC RETAINING WALL = 260m

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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 20 MLD CAPACITY STP AT KORAMANGALA

DWG NAME: OVERALL PLANT LAYOUT WITH CONTOURS

TATA CONSULTING ENGINEERS LIMITED

| SCALE | DWG NO. | ISSUE |
|---|---|---|
| : NTS | TCE.13052A-CV-3008-SL-30400 | P0 |
| DC & DISC: BLR-CV | | SIZE-A1 |

FILE NAME : LAYOUT (20 MLD Koramangala).dwg

FILE NAME: F-091-Rev-R1.dwg

TCE FORM NO. 091 R1

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 20MLD STP, KORAMANGALA, BTM LAYOUT

DWG NO: TCE.13052A-EL-4001-AU-40021

INCOMERS FROM THE FROM NEAREST KPTCL/BESCOM SUBSTATION

11kV Al. CONDUCTOR, XLPE, ARM. UNDER GROUND CABLE

3 WAY RMU (DAS)
11kV, 630A, 350 MVA
(2 OD + 1VL)
(AS PER BESCOM SPECS.)

11kV, 630A ISOLATOR+ES

11kV, 630A ISOLATOR+ES

11kV, 630A VCB

11kV, AL ARMOURED XLPE CABLE

METERING CUBICLE
11KV, 3 CT & 3 PT
(AS PER BESCOM SPECS.)

TTB

TVM

BESCOM'S SCOPE

PROPOSED WORKS UNDER CONTRACTOR'S SCOPE

11kV, AL ARMOURED XLPE UNEARTHED CABLE

11kV METAL ENCLOSED SWITCHBOARD
LOC: 11kV HT ROOM

TO TRAFO OUTGOING

VSS+DV

R Y B

MCB

BUS PT

11kV/110V/110V
CL.-0.5 (METERING)
CL.-3P (PROTECTION)

Line PT-1
11kV/110V/110V
CL.-0.5 (METERING)
CL.-3P (PROTECTION)

SA

MCB

MCB

VSS+DV

R Y B

PROTECTION CT CL:5P20

50,50N,51,51N,27,50BF,95,94

NUMERICAL RELAY

PLC

METERING CT CL:1

MFM

ASS+DA

11kV VCB INCOMER

86

(ON I/C FEEDER)

BON BOFF T TCH SC

DCF RC BS BT ACF

11kV, 3PH, 50HZ, TP, CU BUSBAR, 26.25kA FOR 1SEC

(ON O/G FEEDER)

95 94 86

BON BOFF T TCH SC

DCF RC BS BT ACF

11kV VCB

86

50,50N,51,51N,49,24,50BF
94,WTI,OTI,BR,OSR,PRV
51NS,46

P1

METERING CT CL:1

MFM

PROTECTION CT CL:5P20

R 50/51 50N

N.RELAY

PLC

SA

P2

PLC

TRANSFORMER ANNUNCIATION (TYP)

MARSHELLING BOX(TYP)

11kV, AL ARMOURED XLPE UNEARTHED CABLE

TR-1, 11kV/433V, ONAN, Z=% AS PER IS:1180, DYN11, OUTDOOR PLINTH MOUNTED WITH WTI, OTI, BR, MOG, OSR PRV WITH TAP CHANGER INDICATION WITH +5% TO -15% TAPS IN STEPS OF 2.5%

R 51NS R 64R

NON - SEGREGATED TPN ALUMINIUM BUSDUCT

TR-2, 11kV/433V, ONAN, Z=% AS PER IS:1180, DYN11, OUTDOOR PLINTH MOUNTED WITH WTI, OTI, BR, MOG, OSR PRV WITH TAP CHANGER INDICATION WITH +5% TO -15% TAPS IN STEPS OF 2.5%

R 51NS R 64R

NON - SEGREGATED TPN ALUMINIUM BUSDUCT

NON - SEGREGATED TPN ALUMINIUM BUSDUCT

415V PCC
LOC: SUB-STATION BUILDING

PROTECTION CT CL:5P20

MCB R Y B

ON MCCB
ON OFF TRIP

ON ACB
BON BOFF
TCH SC T RC

METERING CT CL.-1.0

3 MFM 1

TO PLC (RS485)

EDO,ACB,TPN WITH MICROPROCESSOR RELEASE FOR O/C, E/F, UV & S/C

INCOMER-1

NC

BUS-1

I/L

N0

BUS-2

INCOMER-2

NC

EDO,ACB,TPN WITH MICROPROCESSOR RELEASE FOR O/C, E/F, UV & S/C

DG INCOMER

NO

EDO,ACB,TPN WITH MICROPROCESSOR RELEASE FOR O/C, E/F, UV & S/C

415V, 3PH, 50HZ, TPN, CU BUSBAR 50KA FOR 1SEC

BUS-1

BUS-2

415V, 3PH, 50HZ, TPN, CU BUSBAR 50KA FOR 1SEC

FUSE

415/230V AC

TR

MCB DP

TPN ACB

TPN MCCB

BUSCOUPLER SAME AS INCOMER

KVAr APFCR

1.1kV XLPE CU/AL ARMOURED CABLE (TYPICAL) REFER NOTES)

FOR FEEDERS CONTROL SUPPLY

SPARE

RTCC PANEL

BATTERY CHARGER

AIR BLOWER MCC

EFDB SUBSTATION BLDG

EFDB DG ROOM

SPARE 2 Nos

MLDB

CAPACITOR BANK WITH APFC

CAPACITOR BANK WITH APFC

TSPS MCC

SPARE

HEADWORKS MCC

CENTRIFUGE MCC

RTCC PANEL

SPARE

RAS MCC

CHLORINE MCC

FOR FEEDERS CONTROL SUPPLY

DG ROOM

415V DG SET#01 WITH AMF CONTROL PANEL

415V DG SET#02 WITH AMF CONTROL PANEL

G

1.1kV XLPE AL ARMOURED CABLE

TPN ACB

TPN ACB

TPN ACB

DG PCC
LOC: SUB-STATION BUILDING

LEGENDS:-

R RELAYING

| | |
|---|---|
| 50 | INSTANTANEOUS PHASE OVER CURRENT RELAY SUFFIX N- GROUND |
| 51 | INVERSE DEFINITE MINIMUM TIME OVER CURRENT RELAY SUFFIX N- GROUND, SUFFIX NS-STANDBY EARTH |
| 95 | TRIP CIRCUIT SUPERVISION RELAY |
| 94 | ANTI-PUMPING RELAY |
| 27 | UNDER VOLTAGE RELAY |
| 86 | LOCKOUT RELAY (HAND RESET) |
| OSR | OIL SURGE RELAY |
| PRV | PRESSURE RELEASE VALVE |
| 50BF | BREAKER FAIL |
| 46 | REVERSE PHASE/UNBALANCE |
| 24 | VOLTS PER HERTZ RELAY |
| 49 | TRANSFORMER THERMAL RELAY |
| 64R | RESTRICTED EARTH FAULT PROTECTION RELAY |

- 3-PH DISTRIBUTION TRANSFORMER
- CURRENT TRANSFORMER
- POTENTIAL TRANSFORMER
- CABLE TERMINATION
- 415V DRAW OUT TYPE AIR CIRCUIT BREAKER
- 11kV DRAW OUT TYPE VACUUM CIRCUIT BREAKER
- 415V MOULDED CASE CIRCUIT BREAKER
- 415V MINIATURE CIRCUIT BREAKER
- BREAKER CONTROL SWITCH
- INDICATING LAMP
- M MOTOR
- STAR-DELTA STARTERS WITH SINGLE PHASE PREVENTOR AND MPR
- DIRECT ONLINE STARTERS WITH SINGLE PHASE PREVENTOR AND MPR
- G DG SET WITH AMF CONTROL PANEL
- TCH TRIP CIRCUIT HEALTHY INDICATION (WHITE LED)
- SCI SPRING CHARGED INDICATION (BLUE LED)
- BON BREAKER ON INDICATION (RED LED)
- BOFF BREAKER OFF INDICATION (GREEN LED)
- TRIPPED ON FAULT INDICATION (AMBER LED)
- DCF DC SUPPLY FAIL INDICATION (AMBER LED)
- BS BREAKER IN SERVICE POSITION (RED LED)
- BT BREAKER IN TEST POSITION (CLEAR LED)
- ACF AC SUPPLY FAIL INDICATION (AMBER LED)
- ON ON INDICATION (RED LED)
- OFF OFF INDICATION (GREEN LED)
- TRIP TRIP INDICATION (AMBER LED)
- R R-PHASE INDICATION LAMP (RED LED)
- Y Y-PHASE INDICATION LAMP (YELLOW LED)
- B B-PHASE INDICATION LAMP (BLUE LED)
- L/O/R LOCAL/OFF/REMOTE SELECTOR SWITCH
- SA SURGE ARRESTER
- ASS+DA DIGITAL AMMETER WITH BUILT IN SELECTOR SWITCH
- VSS+DV DIGITAL VOLTMETER WITH BUILT IN SELECTOR SWITCH
- 415V, FIXED TYPE MOTOR PROTECTION CIRCUIT BREAKER (MPCB)
- ICP INSTRUMENTATION CONTROL PANEL
- N.RELAY NUMERICAL RELAY
- MFM MULTI FUNCTION METER WITH RS485 COMMUNICATION (AMMETER, VOLTMETER, PF, FREQUENCY)
- PLC PROGRAMMABEL LOGIC CONTROLLER
- MPR COMPREHENSIVE MOTOR PROTECTION RELAY
- M METERING UNIT
- CAPACITOR BANK
- LCSP LOCAL CONTROL STARTER PANEL
- TTB(CT SHORT LINK)
- SS SOFT STARTER
- ISO LOCAL ISOLATOR SWITCH
- RC READY TO CLOSE (CLEAR LED)
- LCP LOCAL CONTROL PANEL
- CONTROL TRANSFORMER
- I/L INTER LOCK

INTERLOCK:

| INCOMER-1 | INCOMER-2 | BUS COUPLER | DG |
|---|---|---|---|
| ON | ON | OFF | OFF |
| ON | OFF | ON | OFF |
| OFF | OFF | ON | ON |
| OFF | ON | ON | OFF |

NOTES:

1. TRIP COIL CIRCUITS OF ALL CIRCUIT BREAKERS SHALL BE PROVIDED WITH TRIP SUPERVISION RELAY TO SUPERVISE THE CIRCUIT IN BOTH OPEN AND CLOSED POSITION OF CIRCUIT BREAKERS.
2. ALL RELAYS USED IN 11kV SWITCHGEAR SHALL BE NUMERICAL TYPE.
3. AMMETERS IN MOTOR FEEDERS SHALL BE PROVIDED WITH SUPPRESSED SCALE UP TO 6 TIMES FULL LOAD CURRENT FOR INDICATION STARTING CURRENT.
4. ACB's SHALL BE PROVIDED WITH MICROPROCESSOR RELEASES FOR ADJUSTABLE OVERLOAD SHORT CIRCUIT, UNDER VOLTAGE AND EARTH FAULT FOR LT BREAKER. VCB'S SHALL BE PROVIDED WITH SHUNT TRIP COILS RATED WITH 110V DC FOR HT BREAKER.
5. MCCB's SHALL BE PROVIDED WITH ELECTRONIC RELEASES FOR ADJUSTABLE OVERLOAD, SHORT CIRCUIT AND EARTH FAULT.
6. ALL PANEL WIRING SHALL BE WITH 1100 VOLTS GRADE PVC INSULATED 1.5 Sqmm STRANDED COPPER WIRE FOR CONTROL WIRING & 2.5 Sqmm FOR CT SECONDARY WIRING.
7. ALL CT'S SHALL BE OF 5A SECONDARY.
8. ALL CONTACTOR/TIMERS etc., SHALL BE RAIL MOUNTED.
9. MINIMUM CONTACTOR RATING SHALL BE 16A.
10. CONTROL SUPPLY SHALL BE 240V AC TAPPED BETWEEN PHASE AND NEUTRAL FEEDERS MODULES.
11. MPCB SHALL BE WITH IN BUILT SINGLE PHASING PREVENTER.
12. ALL CONTACTORS SHALL BE OF AC 3 DUTY.
13. WIDTH OF FEEDER COLOUMN SHALL BE MINI 500 mm CABLE ALLEY SHALL BE 300mm MINI.
14. ALL ACB, MCCB, CONTACTORS, MPCB, & MPR SHALL BE OF TYPE-2 CO-ORDINATION.
15. LCP SHALL BE AS INDICATED IN P&ID.
16. CT RATIO SHALL BE 20% MORE THAN THE FLC 0.85PF & 0.9 EFFICIENCY.
17. CABLE COMPARTMENT SHALL HAVE LED LAMP INTERLOCKED WITH DOOR.
18. ALL INDICATION LAMP SHALL HAVE LED CLUSTER TYPE.
19. ALL MCCB SHALL HAVE EXTENDED ROTORY HANDLE & EXTENDED BUSBAR LINK
20. OPERATION LOGIC OF 415V SWITCHBOARD:
(A) AT NORMAL CONDITION BOTH THE TRANSFORMER INCOMER FEEDER SHALL BE IN CLOSED POSITION. THE BUS COUPLER AND DG INCOMER IN OPEN POSITION.
(B) IN CASE OF FAULTS, THE FAULTY INCOMER FEEDER SHALL BE OPEN POSITON THE BUS COUPLER AND THE HEALTHY INCOMER FEEDER SHALL BE CLOSED POSITON.
(C) IN CASE OF POWER FAILURE, THE DG INCOMER, BUS COUPLER SHALL BE IN CLOSED POSITION. BOTH THE TRANSFORMER INCOMER SHALL BE SWITCHED OFF BY ACTIVATION OF UNDER VOLTAGE RELAY OF THE GRID INCOMER.
21. MOTOR FEEDER <5.5kW WILL HAVE DIRECT CONNECTED AMMETER IN Y PHASE, MOTORS >5.5kW UPTO 15kW WILL BE PROVIDED WITH 1 CT AND AMMETER AND MOTOR >15kW AND ABOVE WILL BE PROVIDED WITH 3 CTS AND AMMETER.
22. NECESSARY INTERLOCK TO SPACE HEATER WITH MOTORS TO BE PROVIDED.
23. ALL MCB SHALL HAVE KW = 100% Ics.
24. ALL MCCB CONNECTED TO MOTOR SHALL BE RATED TO MOTOR DUTY.
25. ALL ACB SHALL HAVE Icu = Ics = Icw.
26. THE 415V SIDE OF THE TRANSFORMER IS PROVIDED WITH NON SEGREGATED ALUMINUM BUS DUCT IF THE TRANSFORMER RATING IS GREATER THAN OR EQUAL TO 1000KVA. FOR THE TRANSFORMER RATING IS LESS THAN 1000KVA XLPE AL ARMUED CABLE SHALL BE PROVIDED ON 415V SIDE.
27. CABLE SIZES LESS THAN OR EQUAL TO 6 Sqmm SHALL BE PROVIDED WITH COPPER CONDUCTORS AND AL CONDUCTORS TO BE USED FOR CABLE SIZES ABOVE 6 Sqmm.
28. CAPACITOR BANK WITH APFC SHALL BE PROVIDED WITH INTERLOCK SUCH THAT PANELS ARE FED BY DG SET, CAPACITOR BANK SHALL BE DISCONNECTED.
29. 20% SPARE FEEDERS WITH MINI OF 1 SPARE FEEDER FOR EACH RATING OF THE OUTGOING FEEDERS SHALL BE PROVIDED IN LT PANELS (PCC/MCC).
30. PORTABLE TYPE STARTER WILL BE PROVIDED FOR GATES.

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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 20 MLD CAPACITY STP AT KORAMANGALA

DWG NAME: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS SHEET 01 OF 05

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE : NTS
DC & DISC : BLR-EL
DWG NO. TCE.13052A-EL-4001-AU-40021
ISSUE P0
SIZE-A1
TCE FORM NO. 091 R1

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FILE NAME : SLD (20 MLD Koramangala).dwg

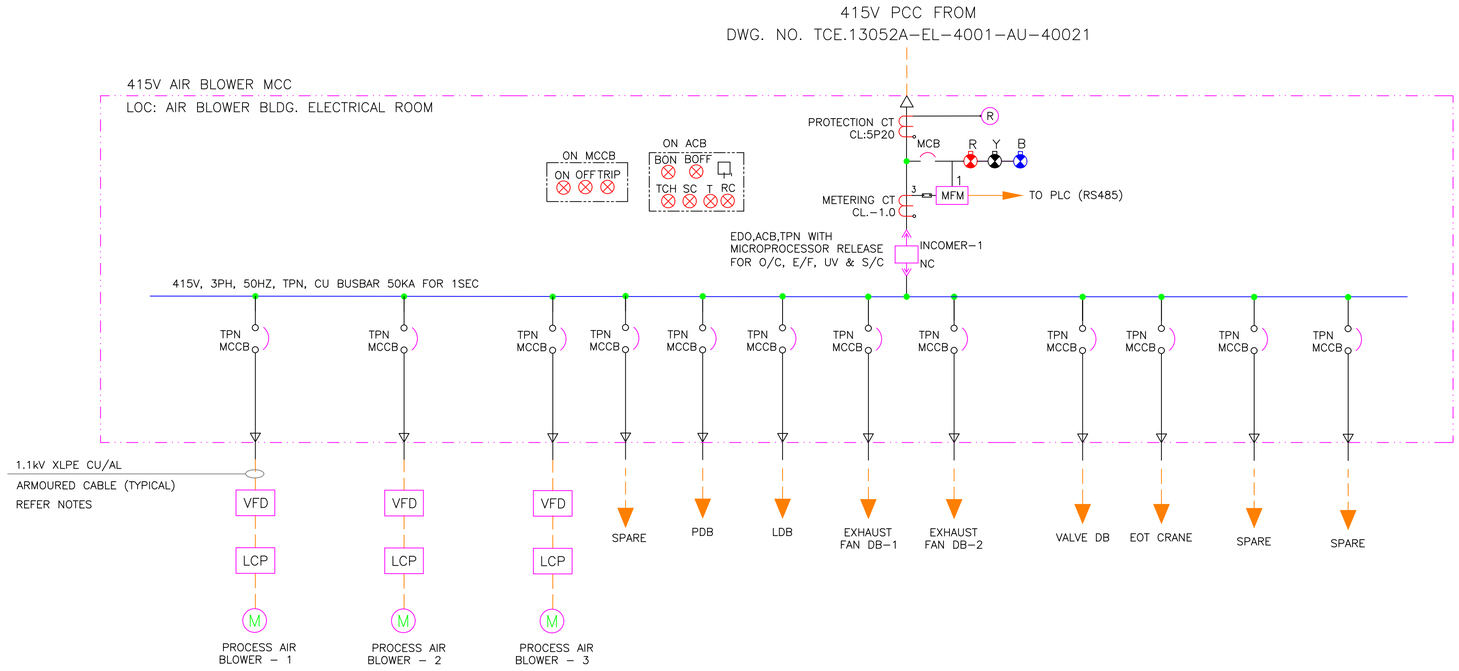
FILE NAME: F-091-Rev-R1.dwg

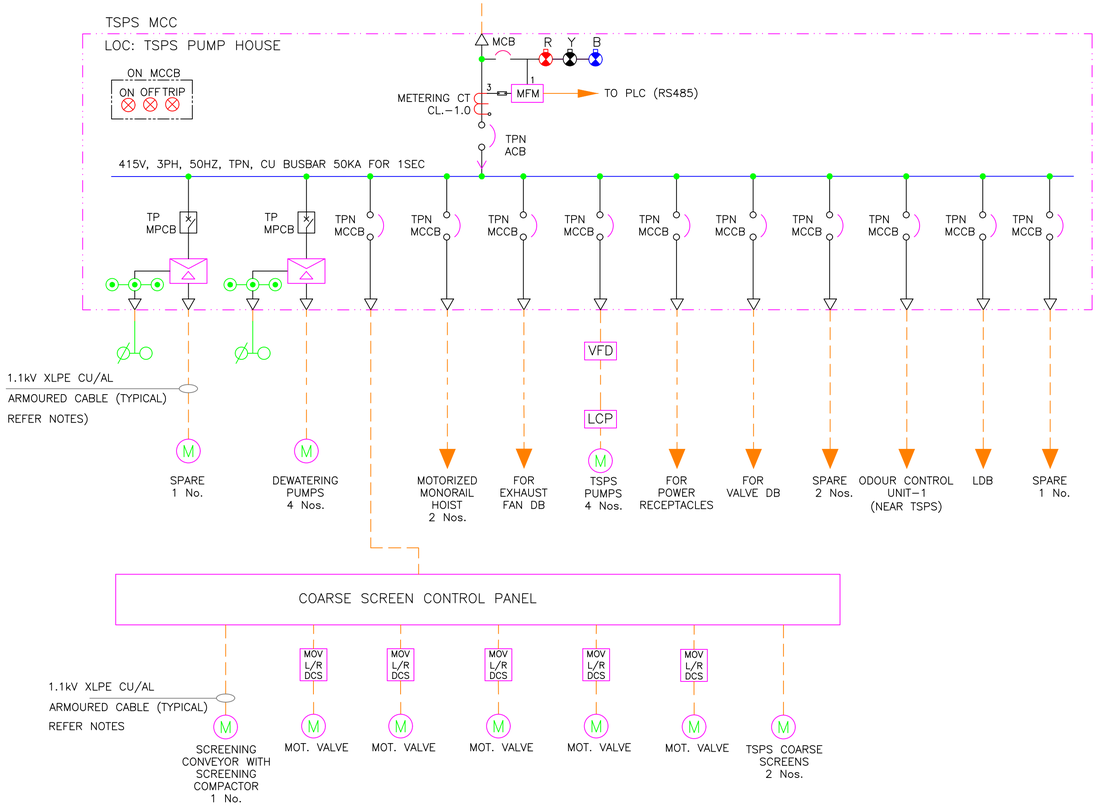
TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 20MLD STP, KORAMANGALA, BTM LAYOUT

DWG NO TCE.13052A-EL-4001-AU-40022

NOTES:-

1. FOR GENERAL NOTES, LEGENDS, REFER DRAWING NO. TCE.13052A-EL-4001-AU-40031.

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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 20 MLD CAPACITY STP AT KORAMANGALA

DWG NAME: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS SHEET 02 OF 05

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

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| FILE NAME : SLD (20 MLD Koramangala).dwg | SCALE : NTS | DWG NO. TCE.13052A-EL-4000-AU-40022 | ISSUE P0 |
| | DC & DISC: BLR-EL | | |

SIZE-A1

FILE NAME: F-091-Rev-R1.dwg

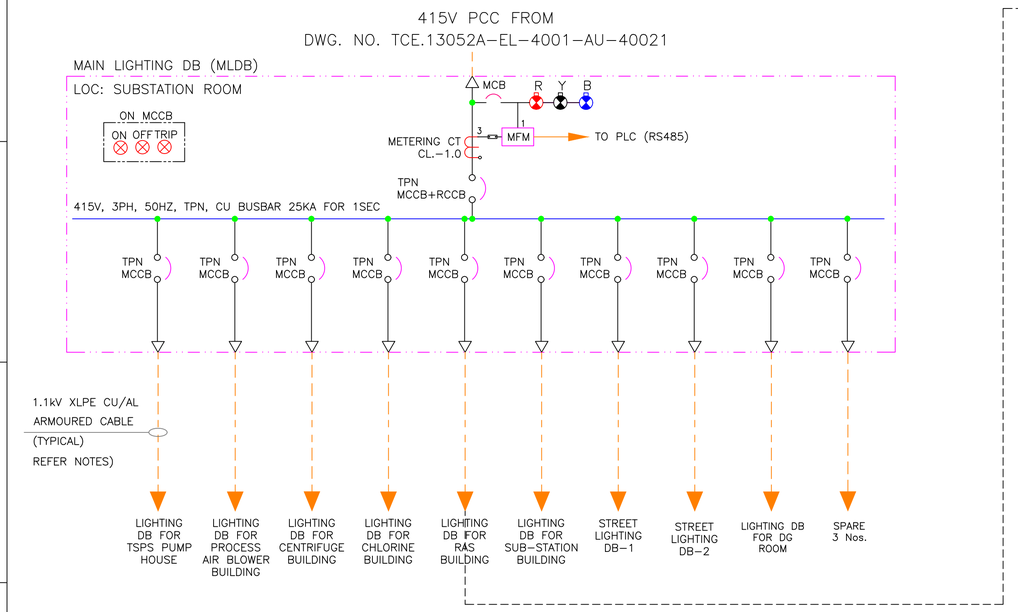
TCE FORM NO. 091 R1

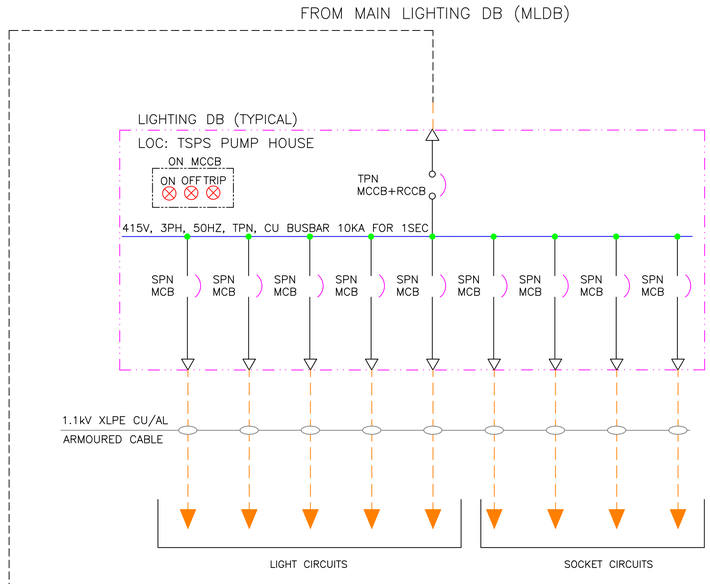
TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 20MLD STP, KORAMANGALA, BTM LAYOUT

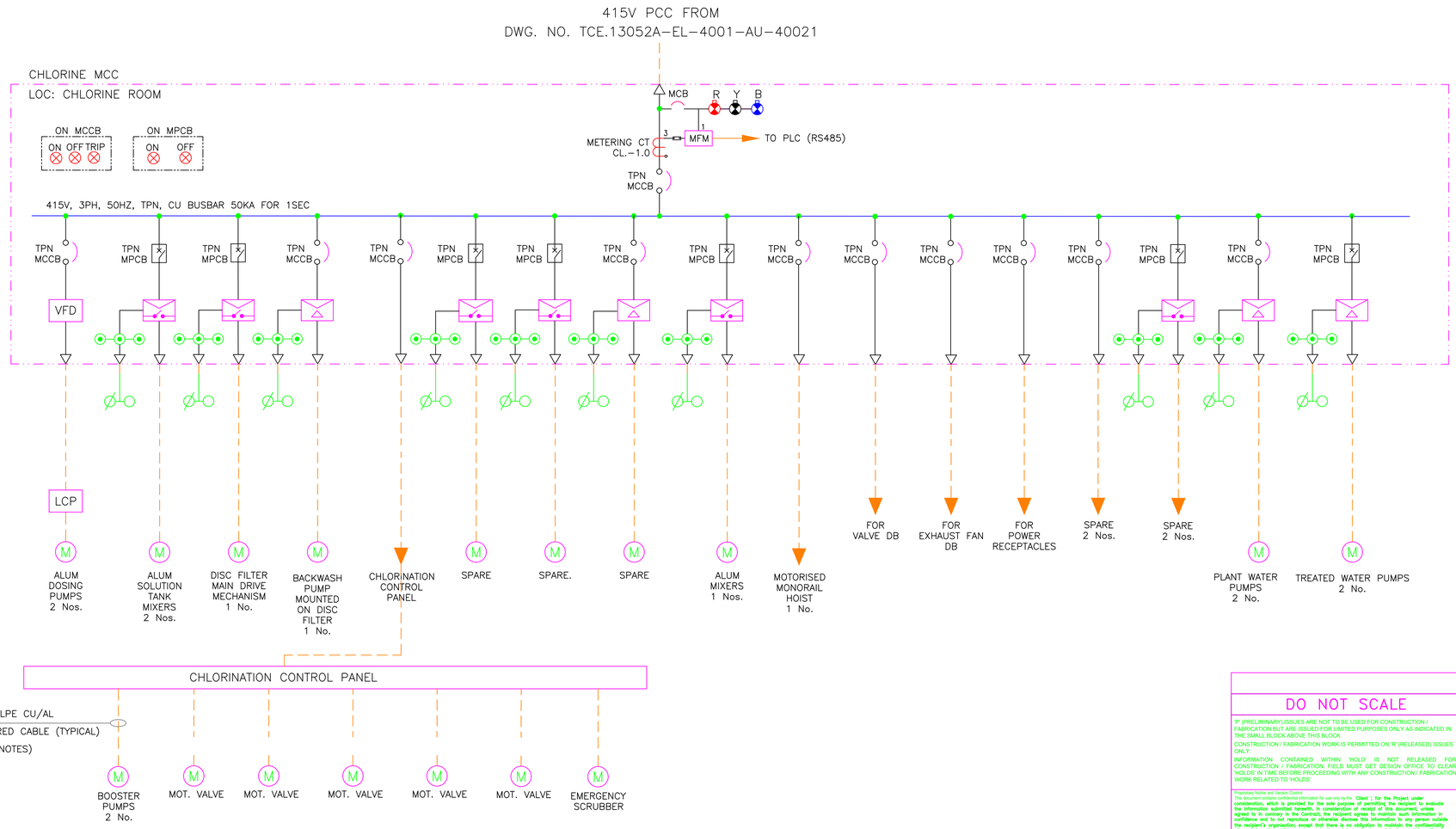
DWG NO TCE.13052A-EL-4000-AU-40023

NOTES:-

1. FOR GENERAL NOTES, LEGENDS, REFER DRAWING NO. TCE.13052A-EL-4001-AU-40031.

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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 20 MLD CAPACITY STP AT KORAMANGALA

DWG NAME: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS SHEET 03 OF 05

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE : NTS | DWG NO. TCE.13052A-EL-4000-AU-40023 | ISSUE P0

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FILE NAME : SLD (20 MLD Koramangala).dwg

FILE NAME: F-091-Rev-R1.dwg

TCE FORM NO. 091 R1

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 20MLD STP, KORAMANGALA, BTM LAYOUT

DWG NO: TCE.13052A-EL-4000-AU-40024

NOTES:-

1. FOR GENERAL NOTES, LEGENDS, REFER DRAWING NO. TCE.13052A-EL-4001-AU-40031.

415V PCC FROM DWG. NO. TCE.13052A-EL-4001-AU-40021

HEADWORKS MCC

LOC: SUBSTATION BUILDING

ON MCCB: ON OFF TRIP

ON MPCB: ON OFF

MCB R Y B

METERING CT CL.-1.0

MFM → TO PLC (RS485)

TPN MCCB

415V, 3PH, 50HZ, TPN, CU BUSBAR 50KA FOR 1SEC

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPN MCCB | TPN MPCB | TPN MPCB | TPN MPCB | TPN MPCB | TPN MCCB | DP MCB | DP MCB | TPN MCCB | TPN MCCB | TPN MCCB | TPN MPCB | TPN MCCB | TPN MCCB |
| FINE SCREEN PANEL | GRIT MECHANISM DRIVE 2 Nos. | GRIT TRANSFER PUMP 2 Nos. | GRIT WASHER MECHANISM 2 Nos. | GRIT DISCHARGE CONVEYOR 2 Nos. | SPARE | FOR AIR CONDITIONING IN SCADA, CONTROL ROOM BUILDING – 2NOs. | FOR AIR CONDITIONING IN CONFERENCE HALL, ENGINEERS ROOM – 2NOs. | FOR EXHAUST FAN DB IN SUB-STATION BUILDING | FOR POWER RECEPTACLES | FOR VALVE DB | SPARE 2 Nos. | SPARE 2 Nos. | ODOUR CONTROL UNIT-2 (NEAR HEAD WORKS) |

1.1kV XLPE CU/AL ARMOURED CABLE (TYPICAL) REFER NOTES)

FINE SCREEN CONTROL PANEL

1.1kV XLPE CU/AL ARMOURED CABLE (TYPICAL) REFER NOTES)

| | | | | | | |
|---|---|---|---|---|---|---|
| SCREENING CONVEYOR WITH SCREENING COMPACTOR 1 No. | MOV L/R DCS → MOT. VALVE | MOV L/R DCS → MOT. VALVE | MOV L/R DCS → MOT. VALVE | MOV L/R DCS → MOT. VALVE | MOV L/R DCS → MOT. VALVE | FINE SCREENS 2 Nos. – 3 KW |

415V PCC FROM DWG. NO. TCE.13052A-EL-4001-AU-40021

CENTRIFUGE MCC

LOC: CENTRIFUGE BUILDING

ON MCCB: ON OFF TRIP

ON MPCB: ON OFF

MCB R Y B

METERING CT CL.-1.0

MFM → TO PLC (RS485)

TPN MCCB

415V, 3PH, 50HZ, TPN, CU BUSBAR 50KA FOR 1SEC

| | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TPN MPCB | TPN MCCB | TPN MCCB | TPN MPCB | TPN MPCB | TPN MPCB | TPN MPCB | TPN MPCB | TPN MCCB | TPN MCCB | TPN MCCB | TPN MCCB | TPN MCCB | TPN MCCB | TPN MCCB | TPN MCCB | TPN MPCB | TPN MCCB |
| | | | | | | | | VFD | VFD | | | | | | | SPARE 2 Nos. | SPARE 2 Nos. |

1.1kV XLPE CU/AL ARMOURED CABLE (TYPICAL) REFER NOTES)

| | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| SCUM TRANSFER PUMPS 2 Nos. | SPARE 2 NOS. | PLANT DRAIN PUMPS 2 Nos. | CENTRIFUGE FEED SUMP MIXER 2 No. | POLYMER SYSTEM 3 Nos. | DEWATERED SLUDGE CONVEYOR 1 No. | SPARE 1 No. | POLYMER DOSING PUMPS 3 Nos. | CENTRIFUGE FEED PUMPS 3 Nos. | ODOUR CONTROL UNIT-3 | CENTRIFUGE CONTROL PANEL 3 NOS. | EOT CRANE 1 No. SLUDGE THICKENED BLDG. | EOT CRANE 1 No. CENTRIFUGE FEED PH | FOR EXHAUST FAN DB – 3 NOS (CHMEICAL BLDG, CENTRIFUGE BLDG, CENTRIFUGE FEED PH). | FOR POWER RECEPTACLES | FOR VALVE DB |

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FILE NAME : SLD (20 MLD Koramangala).dwg

CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 20 MLD CAPACITY STP AT KORAMANGALA

DWG NAME: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS SHEET 04 OF 05

TATA CONSULTING ENGINEERS LIMITED
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| : NTS | TCE.13052A-EL-4000-AU-40024 | P0 |
| DC & DISC : BLR-EL | | |

SIZE-A1

TCE FORM NO. 091 R1

FILE NAME: F-091-Rev-R1.dwg

TITLE: SINGLE LINE DIAGRAM FOR THE ELECTRICAL WORKS AT 20MLD STP, KORAMANGALA, BTM LAYOUT

DWG NO TCE.13052A-EL-4000-AU-40025

NOTES:-

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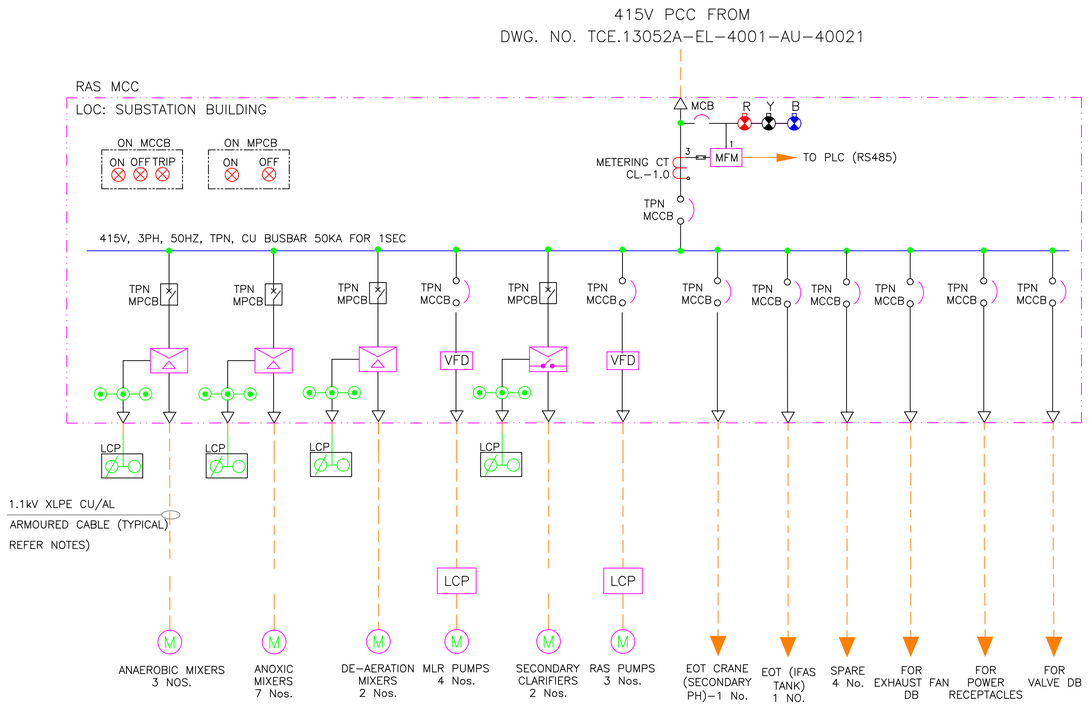


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CLIENT: BANGALORE WATER SUPPLY AND SEWERAGE BOARD

PROJECT NAME: 20 MLD CAPACITY STP AT KORAMANGALA

DWG NAME: AT 20MLD STP, BTM LAYOUT
ELECTRICAL WORKS
SHEET 05 OF 05

TATA CONSULTING ENGINEERS LIMITED
MUMBAI

SCALE : NTS | DWG NO. TCE.13052A-EL-4000-AU-40025 | ISSUE P0

DC & DISC : BLR-EL

SIZE-A1

DO NOT SCALE

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